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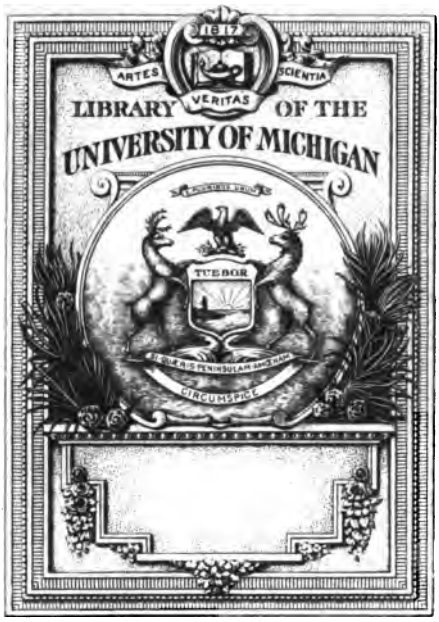

THE GIFT OF
Robert Cohn

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"The Mississippi Floods and Fourteen Feet Through the Valley."

An Appeal

By

Robert Cohn

An Address before the City Club
of Memphis, Tennessee

1913

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Mr. Cohn's address was enthusiastically received by the Club. On motion duly seconded the Club passed a vote of thanks to Mr. Cohn for his interesting remarks.

THOS. B. BLAKE, Secretary,
The City Club of Memphis.

Mr. Cohn's address is as follows:

Gentlemen:

On April 11, 1912, I sent the following telegram to the National Drainage Congress at New Orleans:—

"The present Levee system of the Mississippi, Missouri and Ohio Valleys is faulty from the point of desired results. Most levees are built unscientifically. The whole matter of drainage and levee should be made a matter of the National Federal Government as otherwise piecemeal action will result in unnecessary wasteful expense of money. There is only one thing to do and that is that the United States Government must do for our large rivers what the British Government has done in Egypt. I refer to the great dam at Assuan and the canalization of the Lower Nile. The Mississippi Valley has too much water in the spring time and not enough in the summer and in the fall."

To-day I can bring the same message to you. We have had enormous floods, the water has gone higher than ever, the levees have broken as usual, and there is no permanent relief in sight which is adequate to cope with the situation.

The largest percentage of the people of the Mississippi Valley south of Cairo are in favor of "Levees only." I believe this is the greatest mistake these people can make.

I have chosen as title for my to-day's paper "The floods of the Mississippi and Fourteen Feet through the Valley."

It is my intention to show you that we can have fourteen feet through the Valley easily, provided we take care of the floods and waters of the Mississippi Valley in a thorough scientific and energetic manner. There is one main issue which we have to deal with before we go into the details of this plan, namely: to take the matter of Flood Prevention out of the hands of the individual states and out of the hands of the levee boards and treat this whole matter of the water sheds of the Mississippi, Missouri and Ohio Rivers as one great unit under the management of the Federal Government.

Some far-sighted men are advocating this and there is a movement on foot all over the United States to bring this about, and as you all know there is at present before Congress what is known as The Newlands River Regulation Bill. This measure is in my mind the best one which has been advocated up to the present, and as a matter of fact, Senator Newlands has made in his original bill of last year some very desirable changes and improvements, and it looks to me that the Newlands River Regulation Bill as it now stands is the first step in the right direction not only to avoid floods hereafter but also bring these floods under human control and turn their disastrous powers into powers of usefulness and blessing.

A considerable hostility is shown at present from parts of those states which are mostly affected and which are in reality most interested, to have the floods properly controlled. It is with great sorrow on my part that I have to state here that the most strenuous opposition comes from the states of Mississippi, Arkansas and Tennessee, controlled by the Levee Boards and apparently by small petty politics.

While I respect the opinions of these gentlemen, some of whom are very dear to me, I at the same time, cannot agree with their politics which seems to my mind entirely short-sighted.

It is an absolute necessity that the whole problem is treated as a unit and is taken over by the Federal Government from one end to another. There may be a few jobs lost to some men who are not entirely efficient, but I believe it is absolutely certain that the Government will employ all those men in this work who are efficient and who will do the right thing at the right time, and I believe there is no necessity on the part of the Levee Boards to be in any way uneasy, as the Federal Government is sure to take their work over and protect the outstanding obligations.

I have made these few remarks ahead of my general arguments on account of the peculiar condition of affairs which are prevailing in Memphis and the adjacent territories.

If we want to control the floods and get the proper benefit therefrom we not only have to build levees, and you will understand that I am not an enemy of the levees, but I am an enemy of the plans advocated in this part of the country, namely: that one of "Levees only."

What we need are levees and reservoirs and drainage canals and reforestation, and last but not least, revetments and straightening out of the river, or better say the rivers, through proper dredge work.

There is a whole lot of work, and how has it to be accomplished?

Will you continue the pork barrel way by which millions and millions have gone to waste in this country? will you leave this great national problem to politicians who are trying to get a certain amount of money each year for their constituents? or will you do it in the only right way, that is the work through the Federal Government?

The "Levee Only" people advocate their scheme by mentioning the little flat country of Holland, as an example. I happen to know Holland, I travelled there. I know their dykes and I know their canals and surely I must say it is a poor argument to put up. As I mentioned before we need everything and we need reservoirs more than anything else. Reservoirs to prevent the disastrous overflows, reservoirs to retain the water in order that mankind can use same when needed, in times of draught or in times of low water, for shipping purposes and for the creation of power.

Some people want reservoirs, but they want empty ones to fill up only in times of high waters; I want reservoirs which are useful the whole year around, and I want reservoirs to do the work and to recompense us for the large outlet of work and money we have placed into their building. I want reservoirs with locks, which close all up at times of high waters; I want them filled up to the brim and I want a little stream flowing over the top and creating electric power; when the waters are subsiding I want this reservoir gradually emptying itself, and I want another lock opened and I want another little stream of water running down and creating a little more electric power, and so I want these continued until the reservoir is practically empty. And then the fall rains and the melting winter snow and the early spring rains will set in and fill the reservoirs again and repeat the same work.

There should be reservoirs wherever it is possible to build them, regardless of a little cost, regardless whether a few people have to be transplanted, but the reservoirs must be built and the expenditure of money will turn out to be a blessing for the people.

I spoke about reforestation. Yes, the American people have been robbing themselves, they have done themselves the greatest of harm, they have killed vegetation on the mountains; they have killed vegetation on their slopes; those beautiful fir trees, those proud oak trees are gone, due to the rapacity of men, who, thinking of enriching themselves, have made themselves poor. The water which has been kept back in our beautiful forests by those trees and vegetations has nothing to hold it back now and it rushes down the hillsides to cast ruin.

The erosions of the land are now the cry of the country. It is not too late but it is high time to reforest our mountains and our hills. I am glad to say that the beginning has been made as I see that the Federal Government only a week or so ago appropriated money to buy more tracts of land in the Ohio water shed, with a view of reforestation. May the American people awake to the necessity to co-operate with the Federal Government.

We need canals, canals to guide those surplus waters into the waste of arid lands, to transform the deserts of nothing into the gardens of beauty and plenty.

We need drainage canals to take care of such surplus waters, which waters make the land now impossible to cultivate and change the swamp lands now filled with malaria-bearing mosquitos into snowy cotton fields and ear-loaded corn stalks.

We also need what has never been pointed out too forcibly: we need the canalization and straightening of the Mississippi River, we need the canalization and straightening out of the Ohio River, we need the canalization and deepening of the Missouri River.

By doing so, namely to straighten out the flow of these rivers, by shortening the channels and the bends, we will be able to do away with the formation of sand bars and we will secure a stream which flows calmly and securely for the benefit of the people of the United States from way up in Wisconsin, from way up in Pennsylvania, from way up in Idaho, Nebraska and Minnesota to way down by Memphis to New Orleans and the Gulf of Mexico, and the great object will be perfected by which the United States govern the trade of the American continent, a link with the Panama Canal.

And after you have built this great channel, and I tell you instead of fourteen feet you will be able to secure twenty-one feet, then you will also have to build revetments in order to fortify your work, and to keep it in good order.

But this keeping in good order will cost you a great deal of money, and this will only be properly accomplished if navigation takes hold of your rivers, combined or forming a helping hand with the railroads of the country; many of them seem to be at present wrongfully antagonistic to river regulation.

Now before I go to the task of proving to you that my ideas are proper and that they are within the possibility of achievement, I want to give you here a little poem from one of our friends in Coldwater, Mississippi:

Hold the Headwater.

A rippling, sparkling mountain stream
  Rushed headlong down the glen,
On it the sun did brightly gleam
  So far from the haunts of men.

The stream rushed on, and wider grew
  As each swift running brook
Unto the Central Valley drew
  From some sequestered nook.

The snow which lay on a thousand hills,
  Felt springtime's genial glow,
And soon there rushed ten thousand rills
  To join the stream below.

The stream became a raging flood;
  At last it reached the plain,
And surged against two banks of mud
  Which men had built in vain.

Destruction spread throughout the land;
  The plain became a sea,
Without resource at their command
  The people could but flee.

The efforts made, the money spent
  At the wrong end of the line,
Would have kept the angry water pent
  'Till the burning summertime.

Some people make the argument that the only thing to control the floods is to find a way to get rid of the waters as quickly as possible. This is entirely a wrong idea and if it ever should be adopted, it will be a criminal attempt unconsciously perpetrated but nevertheless true, to ruin to a great extent the fertile lands of the Mississippi Valley.

Water is the greatest asset mankind has on earth. You can go without food for a long time, but you cannot go without water. Therefore, we must preserve water and if we have an abundance of it then we must keep it and so control it in order that we derive the most possible benefits therefrom.

The levee people say that reservoirs are a failure, also say that there are no locations where reservoirs could be properly

built, and if they are built they will not last, and they now refer to the old reservoirs which recently broke and brought about the inundation of Dayton, Ohio, and other places.

Why do reservoirs break and why do levees break? Just because they are not constructed properly. The levee people agree that their levees are not properly built and they call on the Federal Government for help to the extent of sixty million dollars, but they object to the Federal Government taking up this work.

As I mentioned in the beginning we cannot do without levees, but we must have reservoirs, and reservoirs are the greatest success all over the universe.

The greatest system of artificial reservoirs in Europe is located at the headwaters of the Volga and Mzta Rivers in Russia.

The two river systems have for a long time been connected by artificial waterways, but navigation was not possible, except during high water, until advantage was taken of the natural reservoir sites afforded by the numerous lakes near the sources of the two rivers, which were converted into enormous storage reservoirs by the construction of low dams across their outlets. The combined capacity of the system is about 35,000,000,000 cu. ft., the largest reservoir having a capacity of 14,000,000,000 cu. ft. This system of reservoirs has been notably successful in preventing floods and in improving the navigation on the two rivers, the benefit of the latter being felt on the Volga for a distance of over 450 miles, and both rivers being navigable for three months longer than formerly.

The construction of storage reservoirs as a means of flood control has probably been more extensively carried on in Germany than in any other country. A number of these reservoirs are intended solely for the purposes of flood control, while others are, in addition, used for navigation, power development and water supply.

Wupper River.—The Wupper River drains about 240 square miles and empties into the Rhine on the east bank of Rheindorf. Before the construction of the dams, the river, on account of its steep slope and deforested, mountainous drainage basin, had a very irregular discharge. In long periods of drought it dropped as low as 0.05 second-foot per square mile, while in high water it often rose to 90 cu. ft. per second per square mile. The cities of Barmen and Elberfeld are on its banks and were often inundated, while the numerous water power plants along the stream suffered very greatly from the low water.

The Bever enters the Wuppér in its upper course near Hukeswagen. The dam on this stream, built in 1898, controls a drainage area of about 9 square miles and creates a reservoir of 115,500,000 cu. ft., capacity of which about 18,000,000 cu. ft. are kept empty during the flood season. The dam is 52.5 ft. high and was built at a cost of $343,200 or $2,950 per 1,000,000 cu. ft. of storage.

Lingese Valley Dam.—This stream enters the Wupper near its headwaters, not far from Marienheide. In 1900, a dam was built in its valley, storing the run-off from about four square miles. The capacity of the reservoir is 92,000,000 cu. ft., of which 3,500,000 cu. ft. are reserved for the storage of flood water. The dam is 61 ft. high and cost $256,800, or $2,300 per 1,000,000 cu. ft. of storage.

These dams, which have given excellent results, are supplemented in their control of floods by the storage in six other reservoirs, built for domestic and industrial supply, varying in capacity from 10,600,000 cu. ft. to 211,800,000 cu. ft., and in cost from $1,930 to $8,670 per 1,000,000 cu. ft. of storage.

The greatest artificial reservoir in Europe except those in Russia is now under construction near Hemfurt on the Eder River, a tributary of the Weser, and will be completed this year. The reservoir is intended for the storage of the winter and spring flood water, for the feeding of the Rhine-Weser Canal and for the raising of the low-water stage of the Weser in summer and autumn. This increase in low-water stage of the Weser will be about 1.2 ft. at Hann Munden, 50 miles below the dam, and 0.5 ft. at Minden, 124 miles further downstream. From 3,000 to 5,000 h.p. will be developed at the dam.

The drainage area tributary to the reservoir is 552 square miles, the discharge from which at the dam site varies between 0.05 second-foot and 58 second-feet per square mile. The reservoir has a capacity of 7,144,720,000 cu. ft., a surface area of 2,964 acres, a length of 15.5 miles and a maximum depth of 126 ft. The dam contains 392,222 cu. yds. of masonry, quarried in the neighborhood, and is curved upstream with a radius of 1,640 ft. and a crest length of 1,345 ft. The maximum height above the bed of the valley is 136 ft., the width on top is 20.5, and on the bottom 110 ft. The project will cost $4,500,000 or $630 per 1,000,000 cu. ft. of storage. Two-thirds of this money is appropriated by the Prussian Landtag and one-third by the city of Bremen, which is located at the mouth of the Weser.

I could mention here a whole lot more of such reservoirs in all countries but I will only mention one great engineering

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